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ABSTRACT

This report reviews evidence that there are differences between oral and written English that lead to differences in the skills and knowledge necessary to comprehend them. Three categories of differences are considered in an attempt to derive specific, testable hypotheses: differences in the physical nature of speech and writing, differences in the natural uses of speech and writing, and differences in the language characteristics of speech and writing. A final section summarizes the differences between written and spoken language, paying particular attention to skills that novice readers may not have acquired in their experience with listening. (AA)

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Technical Report No. 29

ANALYSES OF DIFFERENCES BETWEEN WRITTEN AND ORAL LANGUAGE

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Consider the tasks that lie before the preverbal infant and the pre-reading child. The infant faces the seemingly formidable task of mastering an entirely new and very complex system of linguistic symbols. The pre-reading child faces the seemingly much easier task of mastering a new code that maps onto an already known symbol system. In reality, however, we find that the ability to understand speech is acquired by nearly every individual at a very young age and with little or no formal instruction, whereas the ability to read is seldom acquired without an extended period of formal instruction and even this is often not entirely successful. We are faced with an important paradox: Why is learning to listen easy but learning to read hard?

One possible answer to this paradox is that perhaps written and spoken language are not as similar as is generally assumed. In this paper, we will discuss this possibility in some detail. To be explicit, we propose the following general hypothesis: There are differences between oral and written English which entail differences in the skills and knowledge necessary to comprehend them. The bulk of this report is concerned with deriving more specific, testable hypotheses from this general one.

The discussion of differences between oral and written language has a long and respectable history. Aristotle, in The Art of Rhetoric (Book III, Chap. XII), pointed out that writing and speech differ in both function and style. His discussion included some of the differences we will cover: the greater precision and detail found in writing, the greater amount of repetition found in speech, and differences caused by the availability of prosody (intonation, stress and rhythm) in speech but not writing.

The Russian psychologist Vygotsky (1962) described many of the differences between writing and speech. He considered differences in sentence structure, precision, and detail ("In writing ... we are obliged to use many more words, and to use them more exactly"). He discussed the effects of prosody and gestures on spoken communication, citing a passage from Dostoyevsky in which the same spoken word is said to be used with six different meanings. Vygotsky's description of the uses of the two modes of language is especially worth considering:

> Writing is addressed to an absent or an imaginary person or to no one in particular -- a situation new and strange to the child.... In conversation, every sentence is prompted by a motive. Desire or need lead to request, question to answer, bewilderment to explanation. The changing motives of the interlocutors determine at every moment the turn oral speech will take. It does not have to be consciously directed -- the dynamic situation takes care of that. The motives for writing are more abstract, more intellectualized, further removed from immediate needs. In written language, we are obliged to create the situation, to represent it to ourselves. This demands detachment for the actual situation (p. 99).

The French novelist Sartre (1964) provides an analysis from a very different perspective. Recalling his shock the first time his mother read him a story, he writes:

> I was bewildered: who was telling what and to whom? My mother had gone off: ... I didn't recognize her speech.... A moment later, I realized: it was the book that was speaking. Frightening sentences emerged from it: they were real centipedes, they swarmed with syllables and letters.... Rich in unknown words, they were enchanted with themselves and their meanderings without bothering about me. Sometimes they disappeared before I was able to understand them; at other times I understood in advance; and they continued to roll nobly to their end without sparing me a single comma. That discourse was certainly not meant for me (p. 46).

Although the differences between writing and speech have been the topic of numerous discussions in a variety of fields, we have been unable to find any attempts to summarize and integrate the literature. This paper is an initial attempt to do so. We will discuss many of the differences between the two modes of language that may result in differences in the skills and knowledge necessary for successful listening and reading. Three categories of differences will be considered, each in a separate section: differences in the physical natures of speech and writing, differences in the uses of speech and writing, and differences in characteristics of the language generally found in speech and writing. In the final section we will summarize the differences between written and spoken language, paying particular attention to the knowledge and skills which are necessary for successful reading but which novice readers might not have acquired in their experience with listening.

Differences in the Physical Natures of Speech and Writing

There are three obvious physical differences between speech and writing: speech provides auditory information and writing provides visual information, speech is generally temporary while writing is permanent, and speech has prosodic features (rhythm, stress and intonation) while writing does not. These differences require of novice readers that they acquire skills and knowledge which they have not needed for successful listening. Novice readers must learn to make fine

visual discriminations, efficiently sample information from the permanent text, and use syntactic, semantic, and schematic knowledge to compensate for the lack of prosodic information.

The visual perception tasks facing beginning readers have been well documented by Gibson and her associates (cf. Gibson & Levin, 1975) and will not be covered here. How readers sample information from written text and how they compensate for the lack of prosody will be detailed in this section.

Sampling Information from Written Text

The permanence of writing provides readers with some very useful options not available to listeners. Readers can sample the text in the most efficient way for their purposes, while listeners must follow the material as the speaker presents it (although this may often be compensated for by the option of interacting with the speaker -- see next section). Readers can set their own pace and vary it at will. They also have the option of determining the level of detail they need to obtain from the text, with the choices ranging from rapidly skimming for main points to reading slowly and attending to every detail. There is evidence that skilled readers do make use of these options. Tinker (1958) reports that the rate at which one reads decreases as the text becomes more difficult. Furthermore, the pace is not simply set and then maintained throughout the text: skilled readers slow down for important or confusing passages and

speed up for easy or unimportant ones (Rothkopf, & Billington[1]).

Efficient readers may also take advantage of the permanance of writing by previewing the text to organize further reading. That is, readers can scan the text for its organization and main points and then use this information to determine what needs to be read slowly and carefully and what does not. Such previewing has long been recommended by educators. Recent research by Sally Standiford (personal communication) provides evidence that previewing increases reading efficiency, even when it is forced upon the readers.

Another option available to readers is returning to previously read parts of the text. Skilled readers do this often, going back to reread as little as a single word or phrase or as much as a large section of text. Taylor (1957) reports that 15% of all eye movements in college level readers are regressive. The use of this rereading option is crucial to skilled reading. Skilled readers proceed rapidly, hypothesizing about what will come next and integrating what is read with previous parts of the text. The rereading option enables them to do this without taking too large a risk of misinterpreting or failing to comprehend, since they can go back and reread when necessary. Wanat (1971) demonstrated that regressive eye movements are likely to occur when the text does not match readers expectations. He compared adults' eye movements while they read two types of sentences, agentive passives (e.g., The ball was hit by the boy) and locative passives (e.g., The ball was hit by the park). Since passive

sentences usually specify the agent at the end, readers are more likely to expect an agent, such as boy, than a location, such as park. Wanat found more regressions and longer regression durations with the locative passives than the agentive passives. Also, the regressions usually occurred after the locative and were directed back to the word by.

The ability to sample the text efficiently is an important reading skill, one which differs from any skills used in listening. A study by Neville and Pugh (1976-1977) provides evidence that good transitional level readers make better use of sampling options than their classmates who read less well. They tested 5th graders on three types of cloze tests: a regular reading test, a restricted reading test, and a listening test. On the listening and restricted tests, information about the words following the missing one was not available. On the regular cloze test this information was available. However, only the better readers seemed to make use of it. The poor readers' performance was equivalent on all three tests, and their errors on the regular reading test were consistent with the preceding context. The good readers' performance on the regular reading test was superior to the other two tests, and their errors were consistent with both the preceding and following context.

Efficient sampling of text requires at least two metacognitive skills. Readers must constantly monitor their own comprehension so they can determine when rereading is necessary. They must also evaluate what they are reading to determine if it is important and needs to be read slowly

and carefully. Very little is known about how skilled readers do this monitoring and evaluation or about how these skills develop, but the limited available evidence suggests that monitoring and evaluation may be surprisingly difficult for young children (Markman, 1977; Brown & Smiley, 1977). The importance of these skills in reading, their development, and how they can be trained are clearly in need of further study.

Compensating for the Lack of Prosody in Text

The existence of prosody in speech but not in writing also results in differences between listening and reading. Prosodic features provide listeners with information helpful to comprehension in several ways. Two will be examined in detail: the use of prosodic cues to divide speech into manageable sized units and their use to determine the new or focal information of a sentence. Readers must compensate for the lack of prosody in text. Some of the ways they do so will also be discussed. We propose that learning to compensate for the lack of prosody may be a crucial step in becoming a skilled reader.

Since short term or working memory has a limited capacity, speech must be divided into manageable sized chunks of words to be understood. However, the speech string cannot be divided arbitrarily, it must be divided into sets of words that have conceptual coherence -- i.e., that go together to form a meaningful whole (cf. Clark & Clark, 1977, chap. 2). Such units are called constituents. Consider, for example, the following sentence divided in two different ways (example from Graf & Torrey, reported in Clark and Clark, 1977, p. 51);

A	B
During World War II even fantastic schemes received consideration if they gave promise of shortening the conflict.	During World War II even fantastic schemes received consideration if they gave promise of shortening the conflict.

Version A is easier to read than B because it is divided at the constituent boundaries. The evidence that constituents are important units in language comprehension is reviewed by Clark and Clark (1977, chap. 2). The important question for our purposes is how do listeners and readers determine constituent boundaries.

Sentences are one type of constituent. In speech, intonation provides the main cue to sentence boundaries, with the intonation pattern varying with sentence type (i.e., assertion, question, command). However, often sentences are too long to comprehend without dividing into smaller constituents. In speech, intonation also provides cues to within sentence constituents: Speakers tend to pause at constituent boundaries (Clark & Clark, 1977, chap. 7). Consider reading out loud the example sentence given above. Do the pauses fall along the divisions given in version A or B?

In writing, punctuation marks designate sentence boundaries and provide information about the type of sentence. However, writing lacks any readily available cues to within sentence constituent boundaries. This does not mean readers cannot determine constituent boundaries. There are

other cues, available in both speech and writing, that depend upon the syntactic and semantic constraints of English. For example, many types of words, such as determiners (e.g., a, the), quantifiers (e.g., some, all, many), and definite pronouns (e.g., I, you, she) generally designate the beginning of a constituent (see Clark & Clark, 1977, chap. 2 for further detail). However, the use of these cues, the only ones available while reading, requires more complex knowledge and processing than the use of intonation cues. This may result in novice readers having difficulty determining the constituents of written sentences, and therefore having difficulty comprehending them.

Prosody also provides cues to the new or focal information of spoken sentences. Consider the following sentences spoken with the capitalized word stressed:

C. JOHN stole the picture.

D. John STOLE the picture.

E. John stole the PICTURE.

In each case the stressed word would be the one carrying the new information. That is, sentences C, D and E could be answers to questions C', D' and E', respectively.

C' Who stole the picture?

D' What did John do with the picture?

E' What did John steal?

In order to efficiently integrate the information received with previous information one must determine which is the new or focal information in the sentence (Haviland & Clark, 1974). Listeners can use cues provided by stress, but readers must find ways to compensate for the lack of these cues. Occasionally key words are marked in print by italics, capitals or underlining, but this is rare and cannot be relied upon. Readers must make greater use of syntactic cues (compare It was John who stole the picture with It was the picture that John stole). Also, readers must make greater use of previous information from the text and from their own knowledge schemata to determine which parts of sentences are new or important. Again, the lack of prosodic cues forces readers to use more complex knowledge and processes than listeners, and we again propose that this may present problems for novice readers.

Differences in the Uses of Speech and Writing

Anything written can be read aloud and anything spoken can be written down. However, the two modes are by no means interchangeable: Some situations and purposes call for spoken communication and others for written. For example, speech is most commonly found in situations where the communicants are in the same place. Therefore, speakers and listeners often share a mutual non-linguistic context and are able to interact with each other. Writing is very rarely employed in such circumstances. Furthermore, speech and writing tend to be used to communicate different types

of information. These differences in the uses of speech and writing, and the resulting differences in the skills and knowledge necessary for listening and reading, are discussed in this section.

The Situations in Which Speech and Writing are Used

Some situations in which speech is used do not allow interactions between the speaker and listener (e.g., television watching) and some do not provide a mutual non-linguistic context (e.g., telephone conversations). However, the speech most frequently encountered by young children has one or both of these characteristics, and the lack of them in writing may present some problems to the novice reader. This proposal is explicated further below.

Effects of the lack of interactions between communicants. In interactive situations the speaker can take into account the listener's knowledge of the language and the world, and it is well documented that speakers modify their language to suit their listeners (Snow, 1972; Gleason, 1973; Gelman & Shatz, 1976). Also, speakers can monitor listeners' comprehension by observing their reactions or asking questions, and listeners can ask questions, request clarification and direct the speaker in other ways. In fact, in interactive situations listeners provide constant feedback to speakers (Wilkinson, 1971).

The child accustomed to interactive speech is used to speech designed especially for him. Therefore he may face certain problems when

interactions are impossible--recall Sartre's complaint that the book paid no attention to what he did or did not understand. Clearly, writers cannot prepare the text with an individual reader in mind (letter writing being an obvious exception). Novice readers must learn to understand language that is not addressed to them in particular, and to do so without being able to ask for clarification. They need to expand their knowledge of language and the world to understand what they read: They cannot rely upon the author to match his writing to their knowledge.

Effects of the lack of a shared context between communicants. As childrens' language abilities develop, both comprehension and production become less dependent upon nonlinguistic context. Cazden (1972, p. 199) writes that "written language is the final point on the developmental dimension towards independence from nonlinguistic context." The lack of a shared context adds some difficulties to the reader's task.

Without a shared context, some ways of clarifying the message are not available: The speaker cannot point to objects or use gestures. Perhaps more importantly, there are many words whose interpretation depends upon the context of their use. These are known as deictic terms. Rommetveit (1973) writes of sentences having deictic anchorage in the context that enables their interpretation and many sentences cannot be interpreted without this anchorage. For an extreme example, consider the following request made without contextual information: Meet me here at noon tomorrow with a stick about this big (from Fillmore, 1971).

When sharing a context with the speaker, the listener can use both linguistic and nonlinguistic information to interpret deictic terms. The reader must depend solely upon the linguistic context. We will take a brief look at some of the uses of deictic terms in speech and writing and note how they may be a source of confusion for children learning to read. Weinrich (1963) divides deixis into four categories:

1. Person deixis: terms whose interpretation requires knowledge of the speaker or hearer. The most common words in this category are first and second person pronouns, as in May I hold hands with you?
2. Time deixis: terms whose meaning depends on the time at which the utterance occurred. Time adverbs such as now and phrases such as a week ago fall into this category. Tense indicators on verbs may also be considered examples of time deixis.
3. Place deixis: terms which depend on the spatial position of the speaker or hearer. The adverbs here and there and certain motion verbs such as come are in this category.
4. Discourse deixis: terms which depend on the previous discourse for their interpretation. The use of pronouns to refer to previously mentioned people or entities (as he is used in John came home because he was tired) is a common type of discourse deixis.

All four types of deixis occur in both speech and writing. In speech, when the speaker and listener are at the same place and time, the interpretation of most deictic terms is fairly direct: "I" refers to the speaker, "you" to the listener, "now" refers to the time of the conversation and "here" to its place, "he" refers to the male that was most recently a topic of conversation, etc. In writing, the interpretation of deictic terms is often more complex. For example, consider the use of deixis in the following sentence describing Peter Rabbit's behavior after his run in with Farmer MacGregor: The next day, Peter went to the mulberry patch. Proper interpretation requires that the reader realize the next day is to be understood within the temporal framework of the story (i.e., that it is the day after once upon a time), not in the context of when he is reading the story. This is true of much of what children read: In order to comprehend the text the reader must take into account the frameworks set by the text.

There have been many studies of children's abilities to take into account perspectives other than their own. These have shown that young children are often egocentric: They have difficulty in taking into account other peoples perceptions (Piaget & Inhelder, 1956), feelings (Shantz, 1975), intentions (Piaget, 1932) or available information (Glucksberg & Krauss, 1975). Therefore, it is possible that some children have difficulty using perspectives set by the text. Failure to do so would often disrupt comprehension.

Differences in the Purposes of Written and Spoken Communication

Besides being used in different situations, speech and writing also differ in the types of things they are usually used to communicate. Olson (1977) argues strongly for the importance of this difference. He proposes that oral and written language differ even as to the representation of reality they facilitate. Oral language is said to be the language of common-sense knowledge while written language is suited to representing scientific and philosophical knowledge. Olson goes on to describe aspects of common-sense knowledge which stand in contrast to scientific and philosophical knowledge. For example, commonsense knowledge is tied to actions and to particular and concrete events. Also, it allows for contradictions. Scientific knowledge is abstract, general and logical. Furthermore, according to Olson, the primary purpose of speech is to maintain social relations between communicants while the primary purpose of written language is to communicate information.

While exceptions can be found, there is a strong tendency for speech to be used for informal social communications and writing for formal informational communications, and for speech to be less detailed and precise than writing. These differences may result in difficulties for novice readers in two ways. First, the reading tasks they face may often assume knowledge that would not be necessary to understand the spoken language they usually encounter. That is, the acquisition of many new knowledge schemata is necessary for successful reading. Secondly, interpersonal communication may be much more motivational than informational.

Many children may lack motivation to work at understanding the abstract, formal, detailed language often found in writing (recall Vygotsky's statement).

Differences in the Language Used in Speech and Writing

Studies have found that the actual language used in writing tends to differ in a variety of characteristics from that used in speech. DeVito (1965) compared samples of the writing and speaking of ten speech professors on topics of professional interest. He found the writing contained longer and less common words, as well as a larger diversity of words. Driemann (1962) obtained similar results analyzing graduate students written and spoken descriptions of paintings. Similar studies have found that writing tends to be less redundant than speech: Speakers often repeat themselves, either verbatim or in paraphrase. A related finding is that people tend to use more words in speech than writing to communicate the same basic message (Horowitz & Newman, 1964; Wilkinson, 1971). Furthermore, it has been proposed that writing tends to be syntactically more complex (as indicated, for example, by frequency of subordinated and conjoined clauses) and more detailed and precise than speech (Horowitz & Berkowitz, 1967; Wilkinson, 1971). It has also been suggested that certain types of complex discourse structures or organizations may be more natural in writing (Danks[2]).

Although many of these differences have been verified empirically, the studies have dealt with language samples from specific populations, situations and communicative tasks. Therefore their generalizability is open to question. If these differences in the language used in speech and writing hold, they would entail differences in the knowledge

necessary for successful reading and listening. The novice reader may well face more complex vocabulary, sentence syntax, and discourse structures than he had previously encountered in speech, and therefore would need to extend his knowledge in these areas. He also must adjust to the greater detail and precision found in writing, and to learn to take advantage of the permanence of writing to compensate for its lack of repetition.

Our interests focus on a particular population: children who have mastered the basic single word decoding skills but still have a lot to learn about comprehending written material (i.e., transitional level readers). It is at this level that reading comprehension problems often become apparent . Unfortunately, there are very few relevant studies comparing the written and spoken language these children encounter. Therefore, in regard to this population, the differences described in this section should be considered hypothesized differences, awaiting empirical investigation. Corpora of the written and spoken language transitional level children encounter need to be collected and analyzed to determine if they differ along the hypothesized dimensions.

The differences between speech and writing in vocabulary, syntax, discourse structure, and precision may be of special interest because they are reminiscent of some of the distinctions between restricted and elaborated codes (Bernstein, 1964). According to Bernstein, speakers of elaborated code use longer, more complex, and more grammatical

sentences, and a more varied vocabulary, than speakers of restricted code. Furthermore, the language of the elaborated code speaker is more abstract, logical and precise. Along these dimensions, written text seems to contain a very elaborated code. Perhaps detailed comparisons of between group differences in language use and the differences between spoken and written language would yield some insight into why certain groups of children often encounter problems at the transitional level of reading.

Summary and Conclusions

In the three previous sections we have described a variety of differences between spoken and written English, and between listening and reading. Our emphasis on differences does not mean we believe there are no important similarities. Clearly there are many. However, much attention has been paid to these in the educational and psychological literatures, while very little has been paid to the differences. In fact, reading comprehension ability has often been treated as if it were a simple sum of oral comprehension and word decoding abilities (see Danks, note 2, for further discussion). Even those who specifically set out to compare oral and written language processing have generally neglected to distinguish orally presented written text from natural oral language, and spoken material written down from ratural written language (e.g., Horowitz & Berkowitz, 1967; Spearritt, 1962; Sticht, 1972; as well as most of the studies reviewed by Duker, 1968).

Those interested in testing and comparing listening and reading abilities have also neglected these distinctions (e.g., Durrell Listening-Reading Series, 1970; Davies & Atkinson, 1965; and Wilkinson, 1968 for further discussion). It is our view that while the similarities are important, the differences also need to be considered: Differences between speech and writing and between listening and reading may be important both in theoretical models of language comprehension and in accounting for reading comprehension problems encountered by some children.

We have divided the differences between speech and writing into three categories: differences in the physical natures of the two modes, in the use of the two modes, and in characteristics of the language found in the two modes. However, these three categories are not completely separable. For example, the greater grammaticality and complexity of written syntax is probably related both to the use of writing for more formal expository purposes than speech and to the permanence of writing which permits the reader to set his own pace and to reread when necessary, thus enabling him to understand complex sentences.

Differences from the three categories also interact in determining how the skills and knowledge necessary for successful reading differ from those necessary from successful listening. By way of summary, we will review some of the areas in which the novice reader may need to acquire new skills and knowledge.

Successful reading may require more comprehensive knowledge schemata (see Anderson, 1976) than listening for a number of reasons. Writers generally cannot tailor their message to fit a particular reader, while speakers often can. Also, writers are unable to receive continuous feedback from the recipients of their message, and are not available to answer requests for clarification, as speakers are in many situations. Since readers are unable to influence how the message is communicated, they must depend upon their own abilities and knowledge to interpret it. The use of writing for more informational, rather than interpersonal, communication, and the greater detail and precision found in writing, also contributes to the novice readers' need to increase and expand their knowledge schemata. Finally, knowledge schemata may come into play in helping readers determine the focal information of sentences without the prosodic features available to listeners.

Many novice readers may also need to increase their knowledge of syntax and vocabulary over that acquired via listening. The syntax encountered in writing may often be more complex, and the vocabulary more diverse, than that found in speech. Also, since prosodic features are not available, readers must depend more upon syntactic and semantic cues to constituent boundaries and focal information. Furthermore, readers must comprehend the syntax and vocabulary as it is written: They cannot interact with the writer to ask for clarification and they are less likely than listeners to have the same information repeated..

Reading often requires taking into account a perspective other than one's own. The reader must interpret the information within the context set by the overall story or text. This is especially important in the interpretation of deictic terms--terms whose meaning depends upon the context of their use.

The development of the ability to take others' perspectives into account has been studied in a variety of situations. For example, Piaget and Inhelder (1956) looked at children's ability to realize what a three-dimensional display would look like from an orientation different than their own. He also studied children's abilities to consider others' perspectives (in the form of their intentions in performing actions) in making moral judgements. Others have looked at children's ability to consider the information available to others while communicating with them (Glucksberg & Krauss, 1975). In these and other areas (Shantz, 1975) young children have been labelled egocentric: They have difficulty taking into account perspectives other than their own. This difficulty may make comprehension of some written material impossible.

Although writing presents some unique difficulties, it also provides the reader with some options that, when used properly, can facilitate comprehension. Since writing is permanent, readers can set their own pace, reread when necessary, and preview the material to organize further reading. Efficient use of these sampling options requires that readers monitor their own comprehension, so they know when they need to

reread or slow down, and evaluate what they are reading, so they can attend carefully to the material that is important for their purposes. These two metacognitive skills of monitoring and evaluating may be very difficult for novice readers (Markman, 1977; Brown & Smiley, 1977).

We have described several types of knowledge that novice readers may need to acquire or increase, and several types of cognitive processing they need to master. It is important to realize that readers cannot simply deal with one of these requirements at a time, but must use all these types of knowledge and processes at once. Even if a reader is capable of monitoring his own comprehension, evaluating the material, taking into account the perspectives set by the text, using syntactic and semantic cues to determine constituent boundaries and focal information, understanding the vocabulary and syntax, and using the required knowledge schemata, doing all of these at once may overcome his attention and working memory capacities. That is, even with each individual component mastered, combining them into efficient reading may present difficulties. Clearly the task is not impossible--most do become successful readers--but perhaps its difficulty does not seem quite as inexplicable as when we began.

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